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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,998	02/18/2004	Bor Z. Jang		1315

7590 10/03/2006

Nanotek Instruments Inc
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Centerville, OH 45458

EXAMINER

KALAFUT, STEPHEN J

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/779,998

Applicant(s)

JANG, BOR Z.

Examiner

Stephen J. Kalafut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 18 Feb 2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10 and 12-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Shchori *et al.* (US 7,022,431).

Shchori *et al.* disclose an electrochemical cell (50) that includes an anode (52), a cathode (54), and an electrolyte between them, which comprises an “electroactive soluble material”, a deliquescent material, and an adhesive polymer (column 5, line 64 through column 6, line 3). The “electroactive soluble material” would correspond to the present “ion conductive material”. The adhesive polymer would take the form of a gel or polymer precipitate, and would undergo some crosslinking (column 7, lines 37-44). Since water would be present, due to the deliquescent material, this would form a hydrogel. Types polymer include chitosan (column 9, line 14), polyacrylic acid and polyethylene oxide (column 11, lines 17-20), which would not be soluble in water, and are the same as, or similar to, the presently used polymers. The polymer forms a flat layer between the electrodes (column 7, lines 53-62) and thus a porous membrane. Alternatively, an additional porous polymer to contain the components between the electrodes may be used (column 7, lines 11-19), which would form a membrane. Anode active materials include zinc and iron, while the cathode may comprise a metal oxide (column 6, lines 4-9). The anode is in the form of a thin film (figure 2). The cathode may include carbon powder (column

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6, lines 7-9). The deliquescent material may be ZnCl_2 (column 6, lines 10-15). KOH may also be present (column 11, lines 25-28). The cell also includes two terminals (77, 87) and is open and flexible (column 5, lines 60-63).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shchori *et al.*

These claims differ from Shchori *et al.* by reciting various anode and cathode active materials, physical forms of the anode material and cathode conductor, various deliquescent materials, and dimensions for the electrode layers. The anode and cathode active materials are conventional in the art, and exemplified by Shchori *et al.* (column 6, lines 4-9), the other chalcogenides being substitutes for oxides due to their same valence. Platelets and fibers are known types of particulate materials. The ordinary artisan, taught by Shchori *et al.* to use a deliquescent material, would be able to select a material known to have this property. Given the purpose of making a flexible cell, the artisan would be able to determine optimal dimensions for the electrodes in order to assure this. For these various reasons, these claims would be obvious over Shchori *et al.*

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shchori *et al.* in view of Nitzan (US 5,652,043), cited by applicant.

This claim differs from Shchori *et al.* by reciting current collectors for the two electrodes. Nitzan discloses a flat open cell (20) that includes current collectors (22, 24) for electrodes, which improve the conductivity thereof (column 6, lines 41-43). To obtain this improved conductivity, it would be obvious to use the current collectors of Nitzan with the electrodes of Shchori *et al.*

Claims 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shchori *et al.* in view of Parker (US 6,369,793).

Shchori *et al.* do not disclose the use of the present cell to power a device having an electronic component and a substrate. Parker discloses a printed display system (10) including an electronic display component such as electronic ink (column 1, lines 58-62), which is powered by a battery (column 1, lines 45-47). The display is visible, and thus performs a sensible function and would be a visual device. The system may be a greeting card or a commercial label, which would be printed matter (column 1, lines 39-45), and also includes a substrate (18). Because the system of Parker includes a battery, and because the battery of Shchori *et al.* is flat and would thus be physically compatible within the system of Parker, it would be obvious to use the battery of Shchori *et al.* to power the display device of Parker.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fleischer *et al.* (US 6,225,009), Ying *et al.* (US 6,423,444), Faris (US 6,911,273) and Birke *et al.* (US 6,706,441) disclose batteries with deliquescent or hygroscopic components.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sjk



STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP

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